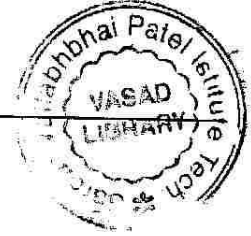


22/11/22

Seat No. : _____



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**EP-I Transport Engg.
(Urban Transportation Planning)**

**Time : 3 Hours]
(10 : 30 A.M. to 1 : 30 P.M.)**

[Max. Marks : 100

- Instructions :**
- (1) Figures to right indicate full marks.
 - (2) Answer to two sections should be written in separate answer books.
 - (3) Use of programmable calculators is prohibited.
 - (4) Draw neat sketches and assumes suitable data wherever necessary.

SECTION - I

1. (a) Describe the basic steps involved in Urban Transportation Planning with a flow diagram. **18**
(b) Describe various goals and objectives to be achieved through transportation planning.
(c) Frame the guidelines for
 - (i) fixing boundary of study area
 - (ii) dividing study area into zones

2. (a) Explain various objectives of co-ordination. **16**
(b) After having listed the types of co-ordination, discuss in detail any one.
(c) Discuss the automated Highway system.

OR

- (a) Classify
 - (i) Urban Transit Systems
 - (ii) Urban Rapid Transit Systems
- (b) Write a detailed note on "Demand Responsive Transport System."
- (c) Explain methods to present O-D-data.

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P.T.O.

3. Write short notes on any four :

16

- (i) Home interview survey
- (ii) Buses as a Mass Transit System
- (iii) Sample size for O-D survey
- (iv) Present state of art of co-ordination in India.
- (v) Centroid of zone, cordon line and screen line.
- (vi) Distinguish between Railway and Roadway.

SECTION – II

4. (a) Explain how to find the initial G.F. of a Zone.

18

(b) Explain the significance of trip generation. Also discuss the factors which govern the trip production and trip attraction.

(c) Compute the future inter zonal trips exchange by FRATAR model for the following given data :

O \ D	1	2	3	4	G.F.
1	–	100	200	100	3
2	100	–	600	300	4
3	200	600	–	800	2
4	100	300	800	–	2
G-F	3	4	2	2	

5. (a) (i) Explain factors affecting the choice of travel mode.

16

(ii) Discuss the post-distribution model split analysis and its limitations and advantages.

- (b) The trips produced and attracted by 3 zones and travel times (tt) in minutes are shown in figure below :

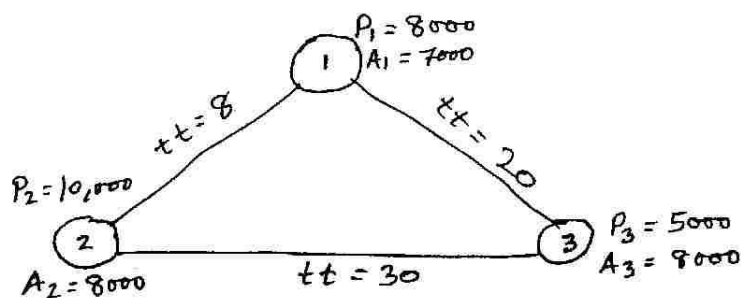


Fig - 1

Assuming the gravity model for trip distribution with $F_{ij} = t_{ij}^{-2}$ (where t_{ij} is the shortest travel) compute.

- The trip distribution among the zones.
- The two-way link volumes on each link.

OR

- (a) The socio-economic data was collected from the 28 zones. Develop the trip generation equations :

Total household income = $\Sigma x_1 = 4800$

Total household size = $\Sigma x_2 = 210$

Total household trips = $\Sigma y = 257$

$\Sigma x_1^2 = 885,000$, $\Sigma x_2^2 = 1718$

$\Sigma x_1 x_2 = 36100$, $\Sigma x_1 y = 44350$

$\Sigma x_2 y = 2105$ & $\Sigma y^2 = 2625$

- (b) There are 4 zones in the study area. Develop the future distribution of trips matrix for the following present trips.

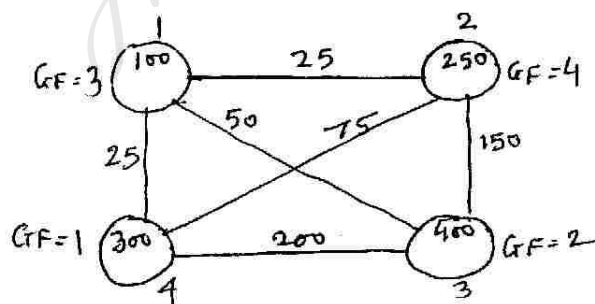


Fig - 2

(c) Three zones A, B & C are connected by two lane roads as shown :

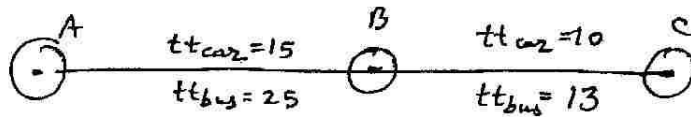


Fig - 3

The probability P_C of choosing car mode is found to be given by

$$P_C = \frac{1}{1 + e^{-4(x)}}$$

Where $u(x) = 0.86 - 0.08 (tt_{car} - tt_{bus})$

The trip exchange between zones are as under :

From	To	Person trips/day
A	B	1200
B	A	0
A	C	500
C	A	1800
B	C	400
C	B	500

6. Write short notes on any four :

16

- (i) Trip end models
- (ii) Choice of travel mode
- (iii) Methods of route assignment (only list) and factors affecting route choice.
- (iv) Basic information about socio-economic variables.
- (v) Purpose of trips and types of trips.
- (vi) Category Analysis.